UNIVERSITI TEKNOLOGI MARA

ANTIOXIDANT AND ANTI-ULCER EFFECT OF *Elaeis guineensis* Jacq. (OIL PALM) LEAVES ETHANOLIC EXTRACT ON EXPERIMENTAL RATS

NURUSYIFA' BT ABD RAHIM

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CONFIRMATION BY PANELS OF EXAMINERS

I certify that a Panel of Examiners has met on 26 January 2016 to conduct the final examination of Nurusyifa' Bt Abd Rahim on his Master of Science thesis entitled "Antioxidant and Anti-ulcer Effect of *Elaeis guineensis* jacq. (Oil Palm) Leaves Ethanolic Extract on Experimental Rats" in accordance with Universiti Teknologi MARA Act 1976 (Akta 173). The Panel of Examiners recommends that the student be awarded the relevant degree. The Panel of Examiners was as follows:

Noor Hana Hussain, PhD
Associate Professor
Faculty of Applied Sciences
Universiti Teknologi MARA
(Chairman)

Noorain Hashim, PhD
Faculty of Applied Sciences
Universiti Teknologi MARA
(Internal Examiner)

Mahmood Ameen Abdulla Hassan, PhD
Professor
Faculty of Medicine
University of Malaya
(External Examiner)

DR MOHAMMAD NAWAWI
DATO' HAJI SEROJI
Dean
Institute of Graduates Studies
Universiti Teknologi MARA
Date: 13 June 2016

ABSTRACT

The aim of the study was to determine the anti-ulcer effect of *Elaeis guineensis* Jacq. (oil palm) leaves ethanolic extract on ethanol-induced ulcer in rats. In the present study, the rats were pre-treated with *E. guineensis* leaves (100, 200 and 500 mg/kg b.wt.). The phytochemical contents of the leaves were screened using Gas Chromatography Mass Spectrophotometer (GC-MS). Meanwhile, antioxidant activity was evaluated using 1, 1-diphenyl-2-picrylhydrazyl (DPPH) radical scavenging assay with five different concentrations (0.01, 0.05, 0.1, 0.15 and 0.2 mg/mL). From the results, the rats pre-treated with 100 mg/kg b.wt. significantly ($p<0.05$) showed gastroprotective effect where only a small area of hemorrhagic lesions appeared on the gastric mucosal layer. Based on the phytochemical screening by GC-MS, the presence of phytol was detected. Phytol is known as diterpenoids, which can be found in chlorophyll and tocopherol. They are known as strong immunomodulatory agent, which is known as one of the components that can increase human immune system in fighting antigens. Antioxidant assay exhibited good antioxidant activity from the ethanolic extract with IC_{50} value of 0.0817 mg/mL. IC_{50} value less than 10 mg/mL is considered as an effective antioxidant. The extract at high concentration (0.2 mg/mL) showed the highest percentage of DPPH inhibition by antioxidant with 67.06%. Thus, explaining the extract at high concentration has higher antioxidant activity compare to lower concentration. In the anti-ulcer study, an increase in concentration *E. guineensis* (0.2 mg/mL), led to an increase in ulcer area. This could be due to the fact that phytol are potentially toxic at high concentration, although they are also good immunomodulatory agents. The extract at low concentration showed an effective gastroprotective activity as compared to the extracts at higher concentrations. Thus, *E. guineensis* leaves appear to have therapeutic potential in preventing gastric ulceration induced by ethanol.

TABLE OF CONTENTS

CHAPTER ONE
INTRODUCTION

1.1 BACKGROUND OF STUDY

Peptic ulcer disease occurs when gastric and duodenal mucosal break (Figure 1.0), which causes the corrosive action of pepsin and hydrochloric acid on the mucosa of the upper gastrointestinal tract. This disease can be caused by many factors. One of them is the infection by bacteria in the gastric and duodenal mucosa. The causal bacterium for this disease is *Helicobacter pylori*. In 2008, this bacteria was reported by the World Health Organization (WHO) as one of the risk factors of stomach ulcers in human. The role of *H. pylori* infection in gastric adenocarcinoma and mucosa-associated lymphoid tissue (MALT) lymphoma has also been recognized (Werawatganon, 2014). In addition, peptic ulcer also can be caused by the local mucosa defenses like bicarbonate and mucus secretion and prostaglandins synthesis (Jesus *et al.*, 2013). It can also be triggered by the intake of non-steroidal anti-inflammatory drugs (NSAIDs) which are the common and widely used in pharmaceutical with more than 30 million prescriptions made every day (Schmidt and Redshaw, 2015).

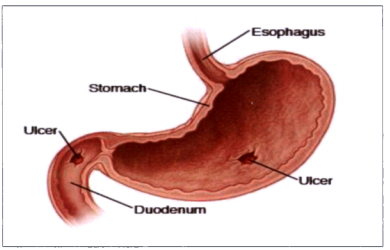

Figure 1.0: Peptic Ulcer Disease
Source: http://www.uofmmedicalcenter.org (2014)